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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/686,825
Filing Date: October 16, 2003
Appellant(s): WANG ET AL.

MAILED
SEP 20 2007
GROUP 1700

Chris Konkol
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/6/07 appealing from the Office action mailed 8/28/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

The following is further noted:

(a) Grounds of Rejection Not on Review

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief.

Claim 4 is rejected under 35 USC 103 as being unpatentable over Ishii et al. (U.S. 6,843,553) as applied to claims 1-2, 5-7, 9-10, and 12-15 and further in view of Adams et al. (U.S. 2002/0147252).

Claim 11 is rejected under 35 USC 103 as being unpatentable over Ishii et al. (U.S. 6,843,553) as applied to claims 1-2, 5-7, 9-10, and 12-15 and further in view of either Miyabayashi et al. (U.S. 6,271,285) or Cooke et al. (U.S. 6,458,458)

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,843,553 B2	Ishii et al.	1-2005
2002/0147252 A1	Adams et al.	10-2002
6,271,285 B1	Miyabayashi et al.	8-2001
6,458,458 B1	Cooke et al.	10-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-2, 5-7, 9-10, and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (U.S. 6,843,553).

Ishii et al. disclose solvent-based ink comprising solvent such as xylene and 0.5-20% colored polymer particles, i.e. composite colorant polymer particles, comprising pigment and polymer obtained from styrene, (meth)acrylate, acrylonitrile, vinyl chloride, etc. wherein the polymer possesses weight average molecular weight of 10,000-500,000. The composite colorant polymer particles possess average particle diameter of 100-1500 nm. It is disclosed that the ink comprises 0.5-20% pigment/polymer and 0.5-5% pigment from which it is calculated that there is present 15-19.5% polymer from which it is calculated that the ratio of pigment to polymer is approximately 0.33 (5/15) (col.1, lines 6-12, col.6, lines 46-49, col.21, lines 14-17, 28, and 50-52, col.21, line 62-col.22, line 7, col.22, lines 15-22 and 44-63, and col.23, lines 26-30). There is no disclosure in Ishii et al. of process as required in present claim 2 or present claim 15.

However, “even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself”. See MPEP 2113. Thus, although Ishii et al. do not disclose the presently claimed process for making the composite colorant polymer particles, it is noted that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the

product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). Therefore, absent evidence of criticality regarding the presently process and given that Ishii et al. meet the requirements of the claimed composite colored polymer particles, it is clear that Ishii et al. meet the requirements of present claims 2 and 15.

It is noted that the present claims require composite colorant polymer particles wherein the mean particle size is less than about 200 nm while Ishii et al. disclose colored polymer particles wherein the mean particle size is 100-1500 nm.

As set forth in MPEP 2144.05, in the case where the claimed range “overlap or lie inside ranges disclosed by the prior art”, a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it would have been within the skill level of one of ordinary skill in the art to recognize that the mean particle size of the colored polymer particles must be small enough so that the colored polymer particles do not flocculate or aggregate and cause clogging of printer.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use composite colorant polymer particles in Ishii et al. with mean particle size, including

that presently claimed, in order to produce ink that will not clog the printer nozzles, and thereby arrive at the claimed invention.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. as applied to claims 1-2, 5-7, 9-10, and 12-15 above, and further in view of Adams et al. (U.S. 2002/0147252).

The difference between Ishii et al. and the present claimed invention is the requirement in the claims of specific type of pigment.

Ishii et al. disclose the use of quinacridone pigment, phthalocyanine pigment, carbon black, etc., however, there is no explicit disclosure of specific pigment as presently claimed.

Adams et al., which is drawn to ink jet ink comprising nonaqueous vehicle and polymer coated pigment, disclose the use of "conventional colored pigment" including quinacridone pigment, phthalocyanine pigment, and carbon black such as Pigment Red 122, Pigment Blue 15, and Pigment Black 7 (paragraph 17).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use conventional pigment including Pigment Red 122, Pigment Blue 15, or Pigment Black 7 as the pigment in Ishii et al. in order to produce ink with desired colored, and thereby arrive at the claimed invention.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. as applied to claims 1-2, 5-7, 9-10, and 12-15 above, and further in view of either Miyabayashi et al. (U.S. 6,271,285) or Cooke et al. (U.S. 6,458,458)

The difference between Ishii et al. and the present claimed invention is the requirement in the claims that the polymer is crosslinked.

Miyabayashi et al., which is drawn to ink jet ink, disclose using a crosslinked polymer given that such polymer permits wettability of the surface of the nozzle plate by the ink composition to be further reduced which allows the ink to be more stably ejected (col.4, lines 50-57).

Alternatively, Cooke et al., which is drawn to polymer coated pigment suitable for use in coatings with non-aqueous medium, disclose polymer coated pigment wherein the polymer is crosslinked in order to increase the shear resistance and thus, prevent loss of the polymer coating from the pigment during blending of the ink (col.7, lines 38-40 and 62-65, col.14, lines 32-37, and col.24, line 67-col.25, line 4).

In light of the motivation for using crosslinked polymer disclosed by Miyabayashi et al. or Cooke et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use crosslinked polymer in the composite colorant polymer particles of Ishii et al. in order to produce ink which is stably ejected from printer, or alternatively, to produce stable ink, i.e. no loss of the polymer coating from the pigment during blending of the ink, and thereby arrive at the claimed invention.

(10) Response to Argument

Appellants argue that Ishii et al. is not a relevant reference against the present claims given that while the purpose of Ishii et al. is to agglomerate the colorant particle in an electrostatic ink jet system, the purpose of the present invention is to avoid agglomeration in a thermal inkjet recording system.

Firstly, with respect to the fact that Ishii et al. utilizes ink in electrostatic ink jet system while the present invention utilizes thermal ink jet system, it is noted that the present claims are drawn to ink composition not method of using or printing the ink. Thus, the present claims are open to ink utilized in any ink jet recording system including electrostatic ink jet system such as that disclosed by Ishii et al.

Further, while it is agreed that Ishii et al. disclose that the colored resins, i.e. composite colorant polymer particles, are ejected from the ink jet printer as agglomerates, it is noted that the formation of such agglomerates only occurs upon printing of the ink, i.e. during method of printing the ink. However, as set forth above, the present claims are not drawn to method of using or printing the ink but rather to the ink composition itself. Attention is drawn to col.23, lines 26-29 of Ishii et al. that disclose that the ink comprises colored particles, i.e. composite colorant polymer particle, possessing average particle diameter of 0.05-5 μm or preferably 0.1-1.5 μm that clearly overlaps the presently claimed composite colorant particle mean particle size. As set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d

257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). It would have been obvious to one of ordinary skill in the art to control the average particle size of the composite colorant polymer particle in Ishii et al. to average particle size, including that presently claimed, in order to produce ink that is effectively printed from printing apparatus. Further, in response to appellants' arguments regarding the use of agglomerates in Ishii et al., it is clear that the size of the composite colorant polymer particles would affect the size of the agglomerates prepared therefrom. Attention is drawn to col.6, lines 53-58 of Ishii et al. that disclose that the colored particles in the ink are agglomerated upon printing in order to form dense and sharp image without blurring. Thus, it would also have been obvious to one of ordinary skill in the art to control the average particle size of the composite colorant polymer particles in Ishii et al. to average particle size, including that presently claimed, in order to form agglomerate of the composite colorant polymer particle such that the ink forms dense and sharp image without blurring.

With respect to the limitation in present claim 1 that the polymer phase of the composite colorant polymer particles are formed *in situ* in the presence of the colorant as well as with respect to present claim 2 and present claim 15 that each recite process for making the composite colorant polymer particles, appellants argue that the presently claimed product is different based on its method of preparation which is the key aspect of the present invention resulting in superior stability as shown in Table 2 of the present specification and that the examiner improperly

ignores explicit and important limitations in the claims based on an improper reading of the case law on product-by-process claims.

However, the examiner's position remains that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself". See MPEP 2113. Thus, although Ishii et al. do not disclose the presently claimed process for making the composite colorant polymer particles, it is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, "although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product", *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). Therefore, absent evidence of criticality regarding the presently process and given that Ishii et al. meet the requirements of the claimed composite colorant polymer particles, it is clear that Ishii et al. meet the requirements of the present claims. It is the examiner's position that appellants have not met the burden of coming forward with evidence establishing an unobvious difference between the claimed product and the prior art product.

Appellants argue that it is incumbent on the examiner to establish that the prior art discloses a product which reasonably appears to be either identical with or only slightly different than the product claimed in the present product-by-process.

In response, it is noted that the present claims require composite colorant polymer particles which have colorant phase comprising pigment and polymer phase. As defined on page 10, lines 1-4 of the present specification, the term “composite” means that the colorant particles comprise at least two physical phases wherein the phase domains are not separated from each other and there are bonds or interfaces between them.

Ishii et al. disclose colored particles that comprise at least two phases, i.e. pigment and resin, wherein the pigment is contained in the resin, i.e. phases are not separated from each other, such that the resin covers the pigment, i.e. there is an interface between the pigment and resin. Given that the colored particles of Ishii et al. meet appellants’ own definition of composite colorant polymer particles, it is the examiner’s position that it has been established that Ishii et al. disclose product which is identical to or only slightly different from the presently claimed composite colorant polymer particles.

Appellants argue that one of ordinary skill in the art would recognize that the presently claimed ink jet composition would perform differently with respect to the various performance properties such as stability or dispersion characteristics than the ink of Ishii et al.

However, appellants have offered no evidence to support this position. It is further noted that “the arguments of counsel cannot take the place of evidence in the record”, *In re Schulze*,

346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). It is the examiner's position that the arguments provided by the applicant regarding Ishii et al. must be supported by a declaration or affidavit. As set forth in MPEP 716.02(g), "the reason for requiring evidence in a declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 24 and 18 U.S.C. 1001".

Appellants also argue that it would be plainly obvious to the skilled artisan that the *in situ* formation of the polymer phase of the composite colorant polymer particles in the presence of colorant would have different structure than the aggregates of Ishii et al. Appellants argue that the pigment colorant of the present particles will not be covered by previously formed separate polymer particles as disclosed by Ishii et al. but rather will have attached polymers formed *in situ* in the presence of the pigment wherein such difference could be easily observable under an electron microscope.

However, attention is called to page 10, lines 1-4 of the present specification that discloses that the term "composite" means that the colorant particles comprise at least two physical phases wherein the phase domains are not separated from each other and there are bonds or interfaces between them. Thus, while in one embodiment of the present invention, it appears that the polymer is attached or bonded to the pigment, in another embodiment, there is an interface between the pigment and resin which clearly encompasses embodiment wherein the polymer covers the pigment as disclosed by Ishii et al.

Appellants argue that the examiner's requirement that appellants "come forward with evidence establishing an unobvious difference between the claimed product and the prior art product" makes no sense given that Ishii et al. provides no examples or instructions on how to make such colored particles other than some vague general description. Appellants argue that Ishii et al. do not state exactly how their colored particles are made or a particular composition for such colored particles.

However, while it is agreed that there are no examples in Ishii et al. that disclose how the colored particles are obtained, attention is drawn to col.21, lines 62-col.22, line 7 and col.22, lines 44-63 of Ishii et al. that disclose that specific pigment and polymer utilized in the colored particles wherein the polymer includes those obtained from alkyl (meth)acrylate, styrene, vinyl chloride, etc. which are identical to polymers utilized on the present invention (see page 7, lines 3-13 of the present specification) and the pigment includes carbon black, azo, phthalocyanine, quinacridone pigment, etc. which are identical to those utilized in the present invention (see col.7, lines 24-29 of the present specification). Further, attention is drawn to col.23, lines 33-47 of Ishii et al. that discloses method for producing the colored particles. For instance, it is disclosed that the colored particles are made by mixing, melting, kneading, and pulverizing the pigment and resin.

Thus, it is the examiner's position that Ishii et al. do disclose process for making the colored particles as well as specific types of pigment and polymer to make the colored particles.

Appellants point to Table 2 of the present specification. The Table compares ink within the scope of the present claims (examples 1-9) with ink outside the scope of the present claims, i.e. comprising no polymer (example C-1) or producing the composite colorant polymer particles by different method (C-2 or C-3). It is shown that the ink of the present invention is superior in terms of optical density and has particle size that falls within the scope of the present claims.

However, it is the examiner's position that the data is not persuasive given that the data is not commensurate in scope with the scope of the "closest" prior art Ishii et al. given that the comparative data does not compare ink as presently claimed with ink outside the scope of the present claims but within the scope of Ishii et al. That is, Ishii et al. disclose preparing the colored resin particle by pulverizing method or polymerization granulation methods not by the method of comparative examples C-2 or C-3. Thus, not only is the process utilized in each of comparative examples C-2 and C-3 outside the scope of the present claims but also outside the scope of Ishii et al. Further, with respect to example C-1, the data is not persuasive given that Ishii et al. already recognizes the criticality of using polymer.

Appellants argue that the data in Table 2 shows that the process limitations at issue in the product-by-process clearly effect important properties of the composite colorant polymer particles in the ink and that deviations from the process of the present invention results in significantly greater particle aggregation.

However, while the data shows variations from the presently claimed process, this comparison is not commensurate in scope with the scope of the "closest" prior art Ishii et al. That

is, the data does not establish that the composite colorant polymer particles produced by method of Ishii et al. would also negatively effect the properties of the ink.

Further, the data is not persuasive given that the data is not commensurate in scope with the scope of the present claims given that there is only data at a few values of the average particle size. There is no data at the lower, middle, or upper end of the presently claimed average particle size of the composite colorant polymer particles. As set forth in MPEP 716.02(d), whether unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, “objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support”. In other words, the showing of unexpected results must be reviewed to see if the results occurred over the entire claimed range, *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980). Appellants have not provided data to show that the unexpected results do in fact occur over the entire claimed range of average particle size of the composite colorant polymer particles.

Appellants also argue that present claim 12 requires polymer having mean size of less than 80 nm while the examples of Ishii et al. disclose the use of polymer particles of 230 nm.

It is agreed that there are no examples in Ishii et al. of composite colorant polymer particles with mean particle size as presently claimed. However, “applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others”, *In re Courtright*, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). A fair reading of Ishii et al. as a whole clearly discloses the use of colored particles, i.e.

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composite colorant polymer particles, that possess average particle size of 0.05-5000 nm or 0.1-1500 nm that clearly overlaps the presently claimed composite colorant polymer particles mean particle size.

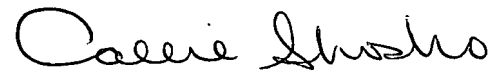
(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,




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